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ABSTRACT

Noting that technological developments will influence both library automation decisions and user expectations, this paper focuses on six issues involved in planning for the use of information technology in libraries: (1) perceiving the information technology needs of library users; (2) addressing their information technology needs; (3) planning to meet their information technology needs; (4) predicting the future of information technology; (5) considering the impact of library technology on library programs and services; and (6) noting concerns associated with the electronic access to and retrieval of information, including networking and licensing, leasing, and copyright concerns. A brief review of technological trends introduces discussions of each of the six issues. Each of these discussions identifies trends in that area and provides questions for consideration in planning, assessing, and evaluating the technological environment. The concluding summary advocates the use of information technology to integrate the research and educational communities, and predicts an advocacy role for future librarians as information, service, and technology providers. (21 references) (MAB)

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"ISSUES IN LIBRARY TECHNOLOGY: INSIGHT, FORESIGHT, AND PREDICTION"

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ISSUES IN LIBRARY TECHNOLOGY: INSIGHT, FORESIGHT, AND PREDICTION

INTRODUCTION

The impact of technology on library services and programs directly affects the manner in which these activities are perceived, planned, and projected by librarians and the infrastructure of our institutions. As technological developments continue to advance, decisions about library automation will continue to expand, and user expectations will continue to change.

We are no longer constrained by the physical walls waiting for users to seek our assistance. Our role and visibility of programs and services in an age of technological enlightenment summons us to penetrate the interior structure and move into the external environment. The issues surrounding technology are numerous. The decisions to be made concerning the extent of selecting technology are equally abundant. The who, what, when, where, and how can be mind-boggling, at times frustrating, but most challenging.

This paper focuses on six issues in information technology. These issues are presented as a guide for the librarian considering information technology, and as a refresher for current users of information technology. Moreover, I also attempted to introduce trends, present questions for planning, assessing, and evaluating the technological environment.

The issues presented are: 1) perceiving the information technology needs of library users; 2) addressing the information

technology needs of library users; 3) planning to meet the information technology needs of library users; 4) predicting the future of information technology; 5) considering the impact of library technology on library programs and services; and 6) noting concerns in the access and retrieval of information technology.

Insight and Perception into Library Technology

Whether librarians want to admit it or not, they are in the business of providing services to users. The library has to be perceived as any other type business. Librarians must have a clear vision of the library's role in the community served.

As librarians preview and review the availability of library technology, a primary issue is determining the requirements of the market or user needs. This process can be implemented through an assessment of the library's mission and goals, and the relationship of these to the institution's mission and goals. A map should emerge that outlines user needs, requirements, and information technologies that will complement needs and requirements.

The literature has not provided us with a blueprint for providing services to users in an environment that produces information in numerous formats, with wide ranging price tags, with differing results, and few standards.[1] Therefore, we are faced with many questions. At best, they become more complicated.

One of the most reoccurring themes in library technology is

funding. It is the nucleus for determining the extent of the availability of information technology in libraries. It impacts what may/may not be purchased in deciding how to meet user needs. It is a factor that impacts all library services and programs.

The insight gained about information technology and its relationship to meeting user needs depends upon the perceptions of the providers. Librarians must be positive, they must be promoters, and they must be players. The provisions for information technology should be directed and managed in a manner that will produce a positive return on the investment -- the intellectual outcome of library users.

Addressing User Needs for Information Technology

User needs cannot be over emphasized in the selection, acquisition, and implementation of information technology. Librarians must be in a position to perceive change and to become visionaries. Homework of the technological environment is needed. Start where you are, and develop a comprehensive plan that will get you from point A to point B. We all walk before we run, and implementing technology is no different.

As a guide, the following questions should be addressed in the initial planning process.

1- What are the needs of library users?

2- What kind of software is needed to address user needs?

3- How should the software be acquired?

4- What type of hardware is needed to support the

software?

5- What type of technical support is necessary?

6- What type of skills and competencies are needed by the library staff?

7- What types of resource sharing agencies or networks are available for information retrieval?

8- What type of information is needed, how much will be delivered, and what are the benefits?

9- Will the system produce the information needed for our users?

10- What costs are associated with each type of information database?

Foresight and Planning in Library Technology

The complexity of an ever changing competitive environment makes planning for the future more important than ever. Foresight focuses on the strategic outlook of the future. This approach utilizes the development of a long range planning model. This model should serve to guide the implementation of information technology as it relates to users. It should also serve to monitor the plan as goals and objectives are met or revised. Taking risks, using wisdom, and being cautious are elements that should not be omitted as the journey is plotted into the technological environment. Pattan summarizes the strategic plan as follows:

> A strategic plan takes a long-term view, defines a broad organizational direction, and uses a top-down approach, at least in part. It identifies long-range objectives and resources needed for realizing the vision.[2]

Collier emphasizes the strategic planning journey in this manner.

> Strategy is not a goal but a journey. A strategic plan is a road map. As in any journey, if you want to get to the destination (goal) efficiently, you should check your actual position versus the map at key junctures. We should also be monitoring to determine whether the "road conditions" have changed enough that a detour is in order.[3]

Emphasis on user and management needs require additional assessment and evaluation of the primary plan or perceptions originally formulated. Where are we now? What has been implemented? What has not? What are the constraints? What are the alternatives? What direction should be taken?

As we move along this continuum, be aware of changes in the environment. Consider changes in 1) user needs (both locally and geographically), 2) user interests, 3) new vendor products and services, 4) the advocacy role of librarians and administrators in technology, and 5) the financial resource-support base. Now ask, What effects do these have on the original goals and objectives of the primary plan? Threats and opportunities encountered should be identified and dealt with accordingly. These may accelerate or deter the primary plan; nevertheless, revise goals and objectives and pursue a course of action that will help achieve the desired outcomes.

Librarians must be aware that technological planning is not a one-shot, now it's finished, let's see what happens approach. It requires an antenna that constantly and continuously scans the user environment, the funding bodies, and the vendor markets.

Once a conceptual environmental framework has been developed, the outcomes can be achieved, and planning for the future becomes more realistic and less agonizing.

Forecasting Library Technology

Librarians always wonder when is the best time to get-in on technology and acquire the system that will meet all their needs and solve all their problems. The commercial sector has approached this scenario by making available numerous products with not one meeting all user needs in an ideal system. Therefore, when forecasting library technology, certain elements will exists, e.g., more selections, more services, more vendors, and more decisions to be made.

The literature abounds with numerous predictions for state, regional, national, and international participation. The provision for library services through networking with access to a variety of databases will be a challenge for the academic community.[4] The ability of librarians to synthesize user behavior and new information products will impact the selection and implementation of information technology. Additional areas identified in the literature as having great impact on future information technology include:

Hardware

1- Increased use of interactive optical technologies.

2- Increased improvements and availability of more CD-ROM products.

3- Availability of a new generation of very high performance data storage devices.

Software

1- Software that allows users to search in the command language of his/her choice and translates into the language needed.

2- Availability of utility packages to repair damaged disks and deleted files.

3- Software that increases access to multi-files.

4- Availability of text retrieval packages.

5- Availability of hard disk protection software.

Telecommunications

1- More developments in integrated image communications.

Standards

1- Development of standards to ensure open systems interconnection.

2- Standardization of user interfaces.

Products

1- Increased developments in erasable optical discs.

2- Increased developments in multi-media products.

Vendors

1- Increase in large company purchases of smaller companies.

2- Greater competition among vendors for the customer's information dollar.

Librarians

1- Greater participation by librarians in developing information technology.

2- Greater acceptance of librarians' input by vendors on information access and system design of techno-

logy.

3- Access vs ownership of collection development in the electronic library.

4- Competencies in marketing skills will be needed to broaden services that will expand user needs.

5- Identify financial resources to acquire and apply the new technology.

Trends

1- Networking will be the technology of the future.

2- Transformation of the online catalog from an automated card catalog to an information access tool.

3- More U.S. and international cooperation in developing technological products.

4- Ability to synthesize user behavior and new information products.

The Impact of Library Technology

The technological options for the 90's and the next generations are unlimited. Many are in developmental stages and others are enhancements to the present markets.

The multi-dimensional aspects of future predictions will compound and even complicate the planning process for library services and programs. Libraries in the mainstream of information technology will be concerned about enhancing information capabilities and keeping afloat. Libraries not a part of the mainstream will have greater concerns and a wider range of choices. The decision-making process will either accelerate or deter the role of information technology in libraries. The impact is how well human minds are developed from the transfusion

or non-transfusion of unlimited access to information. Significant changes in teaching and learning will be affected by the delivery or non-delivery of information technology to human ecology.

As the future is considered and plotted, consideration should be given to the following:

1- What is the desired future of the library's technology program?

2- What impact will technology have on library collections?

3- What will be the impact of technology on library budgets?

4- What amount of access to information will be free to students, faculty, staff, and community users?

5- How will the costs for student, faculty, staff, and community users' access to information be absorbed?

6- Will additional library policies be needed to govern the selection and acquisition of electronic information sources?

7- Will new organizational structures emerge due to increasing technology?

8- Will disk technology (compact, digital, laser, optical, video) provide information retrieval capability superior to online systems?

9- What will be the librarian's role in developing strategies to generate administrative support for library technology and traditional library services?

10- Will the need for reference services decrease as library users become more familiar with the format of services available?

11- How will new and existing college programs affect the library's resources?

12- Will new organizational structures emerge due to increasing technology?

13- What measure of assessment will be used to determine the provision of new and existing library services and the need for additional funding?

14- What realities have the administration perceived for enhancing and supporting existing technology within the library?

15- Will strategic plans "fall by the wayside? due to lack of funding and support by the administration?

Access and Retrieval Concerns of Information Technology

The research, design, and production of information technology products have consumed a large share of the consumer market. Every vendor has a product that will enhance, improve, and/or replace its predecessor. Librarians purchase single user access software from one vendor, and later provide multi-user access to the same software from another vendor. In addition, terminals are transformed into personal computers with the use of software. As a result, LANS and networks are increasing in number. These illustrations are given to introduce a point; and that is, what are the legal implications surrounding these transformations?

The issues concerning licensing, leasing, and copyright are major concerns in the transformation of information technology. The commercial markets have a challenge in addressing these concerns in the access and retrieval of information. Input from librarians is needed to bring these issues to fruition.

SUMMARY

The issues presented in this paper were designed to serve as a model for current and future users of information technology. It is important that librarians achieve a greater perspective of the various issues facing them. These issues provide a conceptual framework for new, emerging, and current users of information technology. The purpose is to enable management to plan more effectively; thereby, achieving more realistic goals.

Technology should focus on enhancing information access to meet user needs through intellectual development. It should cultivate, communicate, promote creativity, learning, values, and develop relationships, collaborative efforts, partnerships, and productivity.[3] The outcome is to network individuals to a vast array of information resources.

Information technology should integrate research and educational communities. Its potential is to build resource-based infrastructures that improve present systems and change the traditionalists. Its potential is also to improve the dissemination of information to the communities served. The advocacy role for future librarians is information providers, service providers, and technology providers. These roles are dependent upon changing behaviors concerning technology, and bridging the gap between what will be missed by those who cannot join the mainstream of technology and those who can. The integration of information technology into the fabric of one's life is a

priority for now and future generations.

As more and more libraries filter into the mainstream of information technology, our users can reap the scholarly rewards of our perseverance and determination. Dubberly states, "Most libraries do not have an opportunity to go first class all the time, but we can get where we need to be."[4]

FOOTNOTES

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2Pattan, John E. "The Strategy in Strategic Planning." Training and Development Journal 40:30 (March 1986).

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